

WE CLAIM:

1. A method for making a curved or wave chip comprising:
  - a) baking pieces of dough to obtain malleable baked chips,
  - b) transporting the malleable baked chips on a conveyer belt between a nip or gap formed between the conveyer belt and a rotating forming roller to curve or curl the malleable baked chips around the roller,
  - c) subjecting the malleable baked chips to a curtain of air to cool and set the chips in a curved or wave configuration and to remove the curved or wave chips off of the rotating forming roller, and
  - d) transporting the removed curved or wave chips on said conveyor belt downstream of the rotating forming roller.
2. A method as claimed in claim 1 wherein said malleable baked chips are cooled at least about 10°F by said curtain of air to set the curved chip in a curved or wave configuration.
3. A method as claimed in claim 1 wherein said malleable baked chips are cooled about 15°F to about 25°F by said curtain of air to set the curved chips in a curved or wave configuration.

4. A method as claimed in claim 1 wherein said malleable baked chips entering said nip or gap have a temperature of about 170°F to about 190°F.

5. A method as claimed in claim 1 wherein said malleable baked chips are transported from the exit of a band oven to said nip or gap within about 20 seconds.

6. A method as claimed in claim 1 wherein said curved or wave chip is a cookie chip.

7. A method as claimed in claim 1 wherein the dough comprises a pregelatinized waxy maize starch.

8. A method as claimed in claim 1 wherein the dough is a wheat-based dough.

9. A method as claimed in claim 1 wherein the malleable baked chips entering said nip or gap are at least substantially flat and at least substantially free of surface bubbles or blisters.

10. A method as claimed in claim 1 wherein said dough comprises wheat flour and

at least one sugar, the total sugar solids content of said dough being about 30% by weight to about 80 % by weight, based upon the weight of wheat flour.

11. A method as claimed in claim 1 wherein the curved or wave chips comprise particulate flavoring ingredients which are visually apparent from opposing concave and convex surfaces of the curved or wave chips.

12. A method as claimed in claim 1 wherein icing is deposited on the surface of the curved or wave chips.

13. A method as claimed in claim 1 wherein said rotating forming roller is located between an upstream roller and a downstream roller, and said belt passes over said upstream and downstream rollers and under said rotating forming roller.

14. A method as claimed in claim 13 wherein said nip or gap is adjustable by horizontal movement of said upstream and downstream rollers and vertical movement of said rotating forming roller.

15. A method for making curved or wave cookie chips comprising:

- a) forming thin, flexible cookies comprising a pregelatinized waxy maize starch into a curved or wave configuration having a substantially concave surface and an opposing substantially convex surface, and
- b) cooling the cookies with air to set the cookies in said curved or wave configuration and to obtain a crispy, chip-like texture.

16. A method as claimed in claim 15 wherein said flexible cookies which are formed into said curved or wave configuration are at a temperature of from about 170°F to about 190°F, and the flexible cookies are cooled at least about 10°F by said air to set the cookies in said curved or wave configuration.

17. A method as claimed in claim 16 wherein said flexible cookies are cooled about 15°F to about 25°F by a curtain of air to set the cookies in said curved or wave configuration.

18. A method as claimed in claim 16 wherein said flexible cookies are cooled while on a rotating roller.

19. A method as claimed in claim 18 wherein said flexible cookies are on said rotating roller for less than one rotation of the roller.

20. A method as claimed in claim 15 wherein said flexible cookies have a thickness of less than about 0.04 inches .

21. A method as claimed in claim 16 wherein the flexible cookies are at least substantially flat and at least substantially free of surface bubbles or blisters.

22. A method as claimed in claim 21 wherein the cookie chips comprise particulate flavoring ingredients which are visually apparent from opposing concave and convex surfaces of the curved or wave chips.

23. A method as claimed in claim 21 wherein icing is deposited on the surface of the curved or wave chips.

24. A method as claimed in claim 21 wherein the cookie chips are at least substantially uniformly curved or waved and stackable upon each other.

25. A method as claimed in claim 15 wherein the thin, flexible cookies are obtained by baking dough pieces, and the thin flexible cookies are formed into said curved configuration while still flexible from said baking.

26. A method as claimed in claim 25 wherein said baking is performed in a continuous band oven.

27. A method as claimed in claim 26 wherein said thin, flexible cookies are formed into said curved configuration on a rotating roller.

28. A method as claimed in claim 27 wherein said thin, flexible cookies are transferred from said band oven to said rotating roller in less than about 20 seconds.

29. A method as claimed in claim 28 wherein said flexible cookies are cooled while on said rotating roller.

30. Apparatus for making curved or wave chips comprising a conveyor belt for transporting baked chips, a rotatable forming roller for forming the baked chips into a curve or wave, said roller forming a nip or gap with the conveyor belt, and a device which provides a curtain of air for cooling the baked chips and for removing curved or wave

chips from the rotatable roller.

31. Apparatus as claimed in claim 30 further comprising an airflow guide for guiding the curtain of air from said device towards said baked chips to cool the chips and to remove them from the rotatable forming roller.

32. Apparatus as claimed in claim 31 further comprising a housing upon which said device and said airflow guide are mounted.

33. Apparatus as claimed in claim 31 wherein the airflow guide has a downstream or bottom end portion and an upstream or upper portion, said downstream or bottom portion being recessed relative to said upstream or upper portion.

34. Apparatus as claimed in claim 31 wherein said air knife is jacketed.

35. Apparatus as claimed in claim 31 wherein the position of said rotatable forming roller is adjustable relative to said conveyer belt for adjusting or setting said nip or gap.

36. Apparatus as claimed in claim 31 wherein said conveyer belt has a curved portion with a concave surface and said rotatable forming roller forms said nip or gap with said curved portion.

37. Apparatus as claimed in claim 31 wherein said conveyer belt forms an upstream angle with said rotatable roller and a downstream angle with said rotatable roller, wherein said angles are adjustable so as to permit the chips to fully curve around and adhere to the forming roller and to then be blown off of the roller and back onto the belt in less than one revolution of the roller.

38. Apparatus as claimed in claim 37 wherein said upstream angle permits said baked chips to lie flat against said belt before they are adhered to said forming roller, and said downstream angle permits the adhered chips to be removed from said forming roller and be transported downstream without substantially changing the curved or wave configuration imparted to said chips by said forming roller.

39. Apparatus as claimed in claim 31 further comprising an upstream roller and a downstream roller, wherein said forming roller is located between said upstream roller and said downstream roller, and said belt passes over said upstream and downstream rollers and under said forming roller.



40. Apparatus as claimed in claim 39 wherein said nip or gap is adjustable by movement of said upstream and downstream rollers and said forming roller.

41. Apparatus as claimed in claim 37 further comprising an upstream roller and a downstream roller, wherein said forming roller is located between said upstream roller and said downstream roller, and said belt passes over said upstream and downstream rollers and under said forming roller, and said angles are adjustable by movement of said said upstream roller and said downstream roller.

42. Apparatus as claimed in claim 41 wherein said forming roller, said upstream roller and said downstream roller are jacketed for maintaining a constant temperature.

43. Apparatus as claimed in claim 31 wherein said airflow guide is mounted at an angle of about 50° to 60° relative to the belt.

44. Apparatus as claimed in claim 31 wherein said airflow guide is mounted to prevent chips which are adhered to said forming roller from making a complete revolution around said forming roller.

45. Apparatus as claimed in claim 30 further comprising a topping applicator downstream of said forming roller for applying at least one stream of topping to a surface of each curved or wave chip removed from said forming roller.

46. Apparatus as claimed in claim 30 wherein said device which provides a curtain of air is an air knife. which extends across the width of said belt.

47. A wave cookie chip comprising:

- a. wheat flour,
- b. a pregelatinized waxy maize starch in an amount of from about 2% by weight to about 8% by weight, based upon the weight of the wheat flour,
- c. at least one sugar, the total sugar solids content of the wave cookie chip being from about 30% by weight to about 80% by weight, based upon the weight of the flour,

wherein said flour, said pregelatinized waxy maize starch, and said at one sugar are least substantially uniformly distributed throughout the cookie chip, said cookie chip having a concave surface and an opposing convex surface, each of said surfaces being at least substantially free of surface bubbles or blisters, said chip having a crispy texture and a

thickness of less than about 0.10 inches.

48. A wave cookie chip as claimed in claim 47 further comprising flavor chips which are visually apparent from said concave and convex surfaces.

49. A wave cookie chip as claimed in claim 47 further comprising at least one stripe of icing on said convex surface or said concave surface.

50. A wave cookie chip as claimed in claim 47 which is stackable one on top of another into a substantially uniform vertical stack.